

# A d d e n d u m

Iowa Department of Transportation  
Office of Contracts

Date of Letting: April 25, 2017  
Date of Addendum: April 11, 2017

<b>B.O.</b>	<b>Proposal ID</b>	<b>Proposal Work Type</b>	<b>County</b>	<b>Project Number</b>	<b>Addendum</b>
002	82-0741-198	BRIDGE – STEEL GIRDER	SCOTT	IM-NHS-074-1(198)5--03-82	25APR002A06

Make the following changes to the PROPOSAL SPECIAL PROVISIONS LIST & TEXT:

Replace SP-150179 for Maintenance Water Line with attached SP-150179a

Replace SP-150208a for Furnish and Install Arch Rib Anchorage Assembly with attached SP-150208b

Make the following changes to the PLAN:

Replace SHEET J.1 with attached SHEET J.1.

Note: Removed allowable lane closure times from Tab 108-23A

Replace SHEET C.8 with attached SHEET C.8.

Note: Removed Standard Road Plan TC-402



**SPECIAL PROVISIONS  
FOR  
MAINTENANCE WATER LINE**

**Scott County  
IM-NHS-074-1(197)5--03-82  
IM-NHS-074-1(198)5--03-82**

**Effective Date  
April 25, 2017**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**150179a.01 DESCRIPTION.**

The Work consists of furnishing and installing all piping, valves, water hammer arrestors, expansion fittings, piping supports, devices and all the components for installation of a maintenance water line for the I-74 approach spans bridges to make it an integrated and functional system as per the contact documents. The main intent of the Work is to provide hose outlets to facilitate washing the bridge surface.

**150179a.02 MATERIALS.**

**A. General.**

1. Manufacturer's equipment used as basis of design is indicated in these Special Provisions and/or the contract documents. If no manufacturer is listed, basis of design is industry standard indicated.
2. Each major component piece of equipment shall have the manufacturer's name and address as well as model number, capacity rating serial number, labels of tested compliances and other pertinent data on a nameplate securely affixed in a conspicuous place. The nameplates of the distributing agent will not be acceptable. ASME Code Rating, or other pertinent data which is die-stamped into the surface of the equipment shall be in an easily visible location that is accessible to service personnel.
3. Where needed for proper identification, operation, maintenance or safety, provide appropriate signs of engraved plastic-laminate. Where appropriate for normal operating and maintenance information, tags of plasticized card stock may be provided in lieu of signs.

**B. Piping.**

1. Provide pipe and tube of type, joint type, grade, size and weight (wall thickness or Class) indicated for each service. Where type, grade or class is not indicated, provide proper selection as determined by installer for installation requirements, and comply with governing regulations and industry standards.
2. **Galvanized Steel Pipe.**  
Hot dipped, Carbon steel, Schedule 40 Galvanized Steel Pipe conforming to ASTM A 53. Each length of pipe shall be legibly identified at the mill by paint, stenciling or raised symbols identifying manufacturer and class of pipe.

**C. Pipe/Tubing Fittings.**

1. Provide factory-fabricated fittings of type, materials, grade, class, and pressure rating indicated for each service and pipe size. Provide sizes and types matching pipe, tube, and valve or equipment connection in each case. Where not otherwise indicated, comply with governing regulations and industry standards for selections and pipe manufacturer's recommendations where applicable.
2. Fittings for Steel Pipe:
  - a. Malleable Iron Threaded Fittings: ANSI B16.3, galvanized, 150 Psig
  - b. Malleable Iron Threaded Unions: ANSI B16.39, selected by installer for proper piping fabrication and service requirements, including style, end connections, and metal-to-metal seats, galvanized, 150 Psig
  - c. Threaded Pipe Plugs: ANSI 16.14.
  - d. Steel Flanges/Fittings: ANSI B16.5, including bolting and gasketing of following material group, end connection, and facing except as otherwise indicated:
    - 1) Material Group: Group 1.1.
    - 2) End Connections: Threaded.
    - 3) Facings: Raised face.
  - e. Pipe Nipples: Fabricated from same pipe as used for connected pipe, except do not use less than Schedule 80 pipe where length remaining unthreaded is less than 1 1/2 inches, where pipe size is less than 1 1/2 inches, and do not thread nipples full length (no close nipples).
  - f. 4 inch pipes may be joined by rigid grooved couplings designed for use with galvanized steel pipe, in lieu of threaded connections. The couplings shall be galvanized.
3. Cold galvanize the threads of piping after the connections with the fittings have been made.

**D. Miscellaneous Piping Materials/Products.**

Gaskets for Flanged Joints: ANSI B16.21; full faced for cast iron flanges, raised face for steel flanges unless otherwise indicated.

**E. Quick Hose Connecting Fitting (Adapters and Fill Cap).**

1. Aluminum Cam and Groove Adapters shall be manufactured in accordance with ASTM F 1122 and A-A-59326 (MIL-C-27487).
2. Adapters shall be of high pressure Cam and Groove type.
3. Handles and Pin shall be 316 Stainless Steel.
4. Face seal gaskets are long lasting BUNA-N.
5. Working pressure 750 psi.

6. Size of adapters and caps (non-lockable) for bridge washing hose connections: 1 1/2 inch by 1 1/2 inch (Note: The Contractor shall coordinate with the Engineer before ordering the type to ensure the selected type is compatible with the Engineer's requirements.)
7. Size of lockable fill caps at Abutment 1 and Pier 16: 4 inch by 4 inch. (Note: The Contractor shall coordinate with the Engineer before ordering the type to ensure the selected type is compatible with the Engineer's requirements.)
8. **Manufacturers.**
  - a. OPW
  - b. Dixon "Andrews"
  - c. Balflex

**F. Expansion Loop.**

1. Flexible loop shall consist of two flexible sections of hose and braid, two galvanized 90 degree elbows and a galvanized 180 degree return, for pipe size 4 inches.
2. Loop shall have a drain plug and support bracket.
3. Loop shall have flanged ends.
4. Fittings shall be SCH 40, carbon steel, galvanized.
5. Hose and Braids shall be Series 300 Stainless Steel.
6. **Manufacturers:**
  - a. Flexicraft Industries, MLF80400
  - b. Metraflex Company
  - c. Senior Flexonics

**G. Flexible Hose Connector.**

1. Flexible Hose Connector shall be doubled braided type female pipe coupling as the end fitting with flanges.
2. Inner corrugated hose and outer braid shall be type 304 stainless steel.
3. Hose size 2 inches, length 10 inches.
4. Flexible Hose Connector shall comply with the following:
  - a. Working pressure at 70°F = 250 psig.
  - b. Test pressure at 70°F = 400 psig.
  - c. Burst pressure at 70°F = 1000 psig.
5. **Manufacturers.**
  - a. Metraflex Company, Model SST
  - b. Flexicraft Industries
  - c. Senior Flexonics

**H. Pipe Sleeves.**

1. General: Concrete Slab Sleeves for piping shall be standard weight galvanized steel pipe with bottom end flush with surface, top end extended 1 inch above slab, caulked.

2. Piping Sleeves shall be fabricated from 16 gauge galvanized sheet steel and shall be 2 inches larger inside diameter than pipe. Sleeves shall be length required for a 4 inches wide collar (waterstop) welded to the sleeve, placed on top of structural slab. Caulk sleeves in place, watertight with silicone sealant.

**I. Valves.**

**1. General.**

- a. Factory-fabricated valves recommended by manufacturer for use in service indicated.
- b. Types and pressure ratings indicated.
- c. End connections, which properly mate with pipe, tube, and equipment connections.
- d. Where more than one type indicated, selection is Contractor's option.
- e. Sizes: Unless otherwise indicated, provide valves of same size as upstream pipe size.

**2. Operators.**

- a. Hand wheels fastened to valve stem for valves other than 1/4 turn.
- b. Lever handle for 1/4 turn valves 6 inches and smaller, other than ball valves.
- c. Gear operators for 1/4 turn valves 8 inches and larger.

**3. Valve Features:** Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Contractor for installation requirements.

- a. ASME B31.9 for building services piping and ASME B31.1 for power piping.
- b. Bypass: MSS SP-45, and except as otherwise indicated, manufacturer's standard bypass piping and valving.
- c. Drain: MSS SP-45, threaded pipe plugs.
- d. Flanged: Valve flanges comply with ANSI B16.1 (cast iron), ANSI B16.5 steel) or ANSI B16.24 (bronze).
- e. Threaded Valve Ends: ANSI B1.20.1.
- f. Butt Welded Valve Ends: ANSI B16.25.
- g. Socket Welded Valve Ends: ANSI B16.18.
- h. Flangeless Valve Bodies: Fit between flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel) or ANSI B16.24 (bronze).

**J. Gate Valves.**

**1. Manufacturers.**

- a. Stockham Valves and Fittings.
- b. NIBCO, Inc.
- c. Milwaukee Valve Company, Inc.
- d. Or equal.

**2. ASTM B 62 Class 125, bronze, screw-in bonnet, rising stem, ASTM B 62 solid bronze wedge.**

- a. Threaded Ends: Stockham Figure B-100, or equal.
- b. Solder Ends: Stockham Figure B-109, or equal.

**K. Combination Air Valves.**

**1. Manufacturers.**

- a. Golden – Anderson Industries, Figure 945.
- b. APCO Valves.
- c. Or equal.

**2. The combination air valve shall consist of a kinetic air and vacuum valve and an air release valve contained in a single body housing. The valve shall be designed to exhaust large amounts**

of air during filling, to release small amounts of accumulated air during operation and to admit large amounts of air upon impending vacuum during draining.

3. The inlet shall be the nominal size of the valve and the outlet shall be the same size as the inlet. Body and cover shall be of cast iron conforming ASTM A 126, Class B. The Air and Vacuum portion of the valve shall be designed to exhaust air at up to sonic velocity without blowing shut. The floats shall be spherical and shall be capable of withstanding a test pressure of 1000 psi. The Air Release portion shall have a stainless steel leverage mechanism and float. The small orifice shall be stainless steel and have a rubber seat.
4. Inlet shall have a surge check.
5. Valve body to be fusion bond epoxy lined and coated.

#### **L. Ball Valves (Drain Valves).**

1. **Manufacturers.**
  - a. Jamesbury, Model 4A-2236XT/36" SE.
  - b. NIBCO, Inc.
  - c. Stockham Valves and Fittings.
  - d. Or equal.
2. Carbon Steel Construction:  
Two piece valves, 2 inch and smaller: ASTM A 216 carbon steel body, 1500 psi stainless steel standard port ball and stem, reinforced TFE packing and seats, stainless steel trim.
  - a. Threaded Ends: Conbraco "Apollo" 73-100 Series, or equal.
  - b. 36 inch stem extension and lever operator comply ANSI B1.20.1 for end connection.
3. MSS Compliance: MSS SP-72.

#### **M. Water Hammer Arrestor.**

1. **Manufacturers.**
  - a. Flexicraft Model MHY320500, Style Hydropad.
  - b. Metraflex Company.
  - c. Or equal.
2. Water Hammer Arrestor shall consist of a diaphragm-type stainless steel bellows unit enclosed by an outer shell. Bellows shall be of multiple-type diaphragms, and heli-arc welded at inner and outer peripheries. Bellows shall be exposed internally to line pressure and all material in contact with line fluid shall be 316L stainless steel. Unit shall have sufficient volume between outer steel shell to limit maximum surge to desired pressure. Unit shall be filled on site with nitrogen gas between bellows and steel shell. Nitrogen gas pressure shall be 3 to 5 psig below the normal line pressure at point of installation. All Hydropads shall be designed and welded to meet ASME unfired pressure vessel codes.

#### **N. Surge Relief Valve.**

1. **Manufacturers.**
  - a. Golden – Andrewson Industries Figure 6625
  - b. APCO Valves.
  - c. Or equal.
2. Main valve body shall be long radius elbow pattern of cast iron conforming to ASTM A126 Class B. The valve body shall be inherently self-cleaning and have a net flow area through the valve

no less than the area of its normal pipe size. The body shall have a removable 316 stainless steel body liner. The valve disc shall be aluminum. The spring chamber shall be aluminum. Valve shall be fusion bond epoxy lined and coated. The valve shall be factory tested and set to open at a pressure of 110 psi. Springs shall permit field adjustment from near zero to 10% above factory setting.

3. The surge relief valve shall quickly open when the system pressure exceeds its setting, remain open as long as the pressure exceeds this setting, and slowly close drop tight when the pressure subsides below the spring setting.

#### **O. Pipe Support Systems.**

##### **1. Manufacturers.**

- a. Anvil.
- b. PHD Manufacturing.
- c. ERICO.

##### **2. 2 inch Water Branch Hangers.**

- a. Carbon steel.
- b. Galvanized.
- c. Anvil Figure 212.

##### **3. 4 inch Water Branch Hangers.**

- a. Carbon steel.
- b. Galvanized.
- c. Anvil Figure 181.

##### **4. Vertical Pipe Supports.**

- a. Carbon steel clamp and bracket.
- b. Galvanized.
- c. Anvil Figure 103.

##### **5. Beam Clamps.**

- a. Carbon steel.
- b. Galvanized.
- c. Anvil Figure 134.

##### **6. Concrete Insert.**

- a. All concrete inserts in bridge deck shall be epoxy coated.
- b. Malleable iron.
- c. Galvanized.
- d. Anvil Figure 282.

#### **P. References.**

Where indicated, comply with requirements and recommendations of the standards or publications listed, except where more detailed and stringent requirements are required by other regulations.

- Building Codes of the City of Bettendorf, and the State of Iowa.
- American National Standards Institute.
- American Society of Mechanical Engineers.
- American Society of Plumbing Engineers.
- American Society for Testing Materials.
- American Water Works Association.
- American Welding Society.
- Association of Safety Engineers.

- Environmental Protection Agency.
- Manufacturers Standardization Society of the Valve and Fitting Industry.
- Mechanical Contractors Association of America.
- National Institute of Standards and Testing.
- National Electrical Contractor Association.

**Q. Submittals.**

1. **Product Data:** Submit installation instructions. Submit manufacturer's catalog cuts, product specifications, and technical product data, including installation instructions. For each type and size of valve include pressure drop curve or chart. Submit valve schedule showing manufacturer's figure number, size, service rating, and valve features for each required valve.
2. Piping schedule showing manufacturer, pipe or tube weight, fitting type, and joint type for piping system.
3. **Welding Certifications:** Submit reports as required for Work.
4. **Shop Drawings.**
  - a. Submit manufacturer's assembly type (exploded view) shop drawings for each type of valve indicating dimensions, weights, materials, and methods of assembly of components.
  - b. Prepare shop drawings to an accurate scale except where diagrammatic representations are specifically indicated by the Engineer as being acceptable. For critical locations, show clearance dimensions.
5. **Operation and Maintenance Manuals.**
  - a. Submit maintenance data and spare parts lists for each type of valve, include product data and Shop Drawings.
  - b. Submit manufacturer's operating instructions for items of mechanical equipment. Supplement operating instructions with Project application instructions. Instructions are to be in typewritten form.
  - c. Submit operating and maintenance instructions for the system as a whole, including as-built schematic drawings, volume of water required to fill the system and estimated volume of water to purge to system of air, requirements for clarity of water to prevent sediment accumulation in lines, sequence for opening and closing valves when filling, purging and draining system with each use, etc.
  - d. The Contractor shall prepare and deliver to the Engineer six copies of "Installation, Operating and Maintenance Manuals and Parts Lists" for all items of mechanical equipment furnished under this item of Work. Each manual shall contain all information pertinent to the equipment and essential for good preventative maintenance practice. Include information about efficient replacement of all expendable components, such as data covering model, type, serial numbers, capacities, and maintenance schedules. Operation instructions shall cover all phases of items installed.
  - e. Manuals shall be compiled in three ring binders and shall be furnished complete with a typed index.
  - f. Manuals shall be prepared by the original equipment manufacturer and shall be complete in all necessary details of information to permit the proper installation, operating and maintenance of the equipment. Manuals shall refer only to the actual equipment provided and all references to alternative equipment shall be deleted. Critical points of the operation and hazardous limits shall be boldly underscored and emphasized.
  - g. Generally, the manuals shall include the items listed below and other features as may be recommended by the manufacturers:
    - Catalog information of the unit installed.
    - Capacity and installation details.



- Special valves and control devices.
  - All points requirement lubrication and type of lubricant.
  - Frequency of lubrication.
  - Operating pressures and temperatures.
  - Relief devices and settings.
- h. In addition to the six hard copies of the manuals described above, submit an electronic copy in pdf format, including all the data included in the hard copy. Wherever possible, the text shall be searchable.

**R. Quality Assurance.**

1. Products shall comply with the specified requirements and shall provide a quality no less than that of the manufacturer's standard products, as specified by their published product data. Off-the-shelf conditions should not be assumed to comply with specified requirements. Do not purchase any materials and equipment until the review of submittals by the Engineer that might affect the purchase.
2. Except as otherwise indicated, provide new products. All products shall be free of defects and harmful deterioration.
3. Provide each product complete with trim, accessories, finishes, guards, safety devices, and similar components recognized as integral to the product or required by governing regulations.
4. Unless otherwise indicated, complete the fabrication, assembly, finishing and testing of products prior to delivery to the site.
5. Contractor Qualifications: Installation and alterations of equipment, specialties and accessories, and repair and servicing of equipment shall be performed only by a qualified Contractor. The term qualified means experienced in such work. The Contractor shall have successfully completed a minimum of five projects in the past similar in size and scope to this Project. The Contractor shall be familiar with all precautions required and shall comply with all the requirements of the authority having jurisdiction, and upon request, submit evidence of such qualifications to the Engineer.
6. Manufacturer Qualifications: Components shall be produced by companies regularly engaged and specializing in manufacturing of pipe, tube, fittings, valves and devices of types and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.
7. Valve Types: Provide valves of same type by same manufacturer to greatest extent possible.
8. Valve and Rating Identification: Provide valves with manufacturer's name (or trademark) and pressure rating clearly marked on valve body.
9. **Codes and Standards.**
  - a. MSS Compliance: Mark valves in accordance with MSS SP-25.
  - b. ANSI Compliance: For face-to-face and end-to-end dimensions of flanged or welded end valve bodies, comply with ANSI B16.10.

**S. Delivery, Storage and Handling.**

1. Deliver products properly identified with names, model numbers, types, grades and compliance labels. Products shall be adequately packaged or protected to prevent deterioration during shipment, storage and handling. Except where prepared and protected specifically for exterior storage, store in a dry and well ventilated indoor space.

2. Delivery, storage and handling of valves:
  - a. Preparation For Transport: Prepare valves for shipping as follows:
    - 1) Ensure valves are dry and internally protected against rust and corrosion.
    - 2) Protect valve ends against damage to threads, flange faces, and weld-end preps.
    - 3) Set valves in best position for handling. Set globe and gate valves closed to prevent rattling, set ball and plug valves open to minimize exposure of functional surfaces; set butterfly valves closed or slightly open; and block swing check valves in either closed or open position.
  - b. Storage: Use the following precautions during storage:
    - 1) Do not remove valve end protectors unless necessary for inspection; then reinstall for storage.
    - 2) Protect valves from weather. Store valves indoors. Maintain valve temperature higher than the ambient dew point temperature. If outdoor storage is necessary, support valves off the ground or pavement in watertight enclosures.
  - c. Handling: Use a sling to handle valves whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use handles or stems as lifting or rigging points.
  
3. Delivery, storage and handling of pipe, tube and fittings:
  - a. Provide factory-applied basic protection and caps on each length of pipe and tube, except for hub-and-spigot pipe. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and eliminate dirt and moisture from inside of pipe and tube.
  - b. Where possible, store pipe and tube inside and protected from weather. Where necessary to store outside, elevate above grade and enclose with durable, waterproof wrapping.
  - c. Protect flanges and fittings from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

#### **T. Special Requirements.**

1. Field Measurements: Before proceeding with the fabrication of the work, the Contractor shall verify all dimensions and take such measurements as are required for proper fabrication and erection of the Work.
2. Coordination: The Contractor shall coordinate this work with adjacent work of other trades.

#### **U. Extra Materials and Spare Parts.**

1. Where spare parts or extra materials are called for in any specification section they shall be supplied.
2. The contractor shall turn over to the Engineer all spare parts and extra materials in the original factory packaging.
3. The Contractor shall supply spare parts as recommended by the various equipment manufacturers. These shall be of the types and quantities shown in the operation and maintenance manuals.

### **150179a.03. CONSTRUCTION.**

#### **A. Product Installation General.**

1. Except where more stringent requirements have jurisdiction, comply with manufacturer's installation instructions and recommendations regarding but not limited to: handling, anchorage, assembly, connections, cleaning, testing, charging, lubrication, start-up and shut-down of equipment within the scope of this work.

2. The plans serve as working plans for the general layout of the various items. However, the layout of equipment, accessories, specialties, and piping systems shown are diagrammatic and do not necessarily indicate every required valve, fitting, trap, elbow, and so forth. Provide such items as required for proper and complete installation of the work.
3. Where new work is to be applied to existing surfaces, removals and patching shall produce surfaces that are suitable for the new work. Patching shall be performed in a neat manner. Finished surfaces of patched area shall be flush with adjacent existing surfaces and shall match the existing adjacent surfaces in texture and finish.
4. Provide a union ahead of each screwed valve, trap, or strainer, and on each piece of equipment and wherever needed to dismantle piping.
5. Changes in pipe sizes shall be made with the proper size-reducing fittings, reducing elbows, or reducing tees. Bushings are not permitted.

**B. Installation of Pipe, Tube, Fittings, Expansion Loops, Supports and Sleeves.**

**1. General.**

- a. Install pipe, fittings and all other specified items in accordance with recognized industry practices achieving permanently leak proof piping systems, capable of performing each indicated service without piping failure.
- b. Install each run with minimum joints and couplings, but with adequate and accessible unions for disassembly, maintenance or replacement of valves and equipment.
- c. Reduce sizes (where indicated) by use of reducing fittings.
- d. Align piping accurately at connections, within 1/16 inch misalignment tolerance.
- e. Comply with ANSI B31.1 - Code for Pressure Piping.

**2. Piping Arrangements.**

- a. Locate piping runs, as indicated, vertically and horizontally (pitched to drain).
- b. Locate runs as shown or described by diagrams, details, and notations.

**3. Piping System Joints.**

- a. Provide joints of type indicated in each piping system.
- b. Thread pipe in accordance with ANSI B1.20.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside dia. Apply pipe joint compound or pipe joint tape (Teflon) where recommended by pipe/ fitting manufacturer, on male threads at each joint, and tighten joint to leave not more than three threads exposed.

4. Flanged Joints: Match flanges within piping system and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.

**5. Pipe supports.**

- a. Fabricate and install pipe supports of type and location as shown on structural design plans and also on mechanical design plans.
- b. Locate pipe supports at maximum spacing of 10 feet. Locate at least one support for each length of pipe at each change of direction and at each valve.

**6. Sleeves.**

- a. Set sleeves in position in formwork. Provide reinforcing around sleeves.
- b. Size sleeves large enough to allow for movements due to expansions and contractions.

**7. Piping Tests:**

- a. Test pressure piping in accordance with ANSI B31.1.

- b. Repair piping systems sections which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage.
- c. Drain test water from piping systems after testing and repair work has been completed.

**C. Installation of Valves, Gate Valves, Combination Air Valves, Ball Valves (Drain Valves) and Water Hammer Arrestor.**

- 1. Except as otherwise indicated, comply with following requirements.
  - a. Install valves where required for proper operation of piping and equipment, include valves in branch lines where necessary to isolate sections of piping. Locate valves so accessible and separate support can be provided when necessary.
  - b. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable.
- 2. Install water hammer arrestor as close to valves as possible.
- 3. Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing; inspect each valve for possible leaks. Adjust or replace packing to stop leaks. Replace valve if leak persists.
- 4. Cleaning: Clean factory finished surfaces. Repair marred or scratched surfaces with manufacturer's touch-up paint.

**D. Coordination with Other Work.**

- 1. Before making any installation, make necessary and proper arrangement for changes required to avoid interference with or improper effect on operation of other systems.
- 2. No additional cost shall be charged for any part of the Contractor's coordination of work.
- 3. If any work is installed so that project work that will be installed later will not have required clearances or will interfere with finished design, the Contractor shall make such changes in their Work as directed by the Engineer to permit the proper installation of all work under the contract.
- 4. Where, in the opinion of the Engineer, there are pre-installation changes that are deemed necessary to avoid interferences, the Contractor shall make these changes.
- 5. For locations where several elements of mechanical or structural Work shall fit into an available space, prepare coordination shop plans showing accurate physical dimensions. Submit these plans to the Engineer for approval prior to purchase, fabrication, and installation of work.

**E. Coordination.**

- 1. Piping shall be positioned straight, true and aligned with other work.
- 2. Give right-of-way to piping that shall slope for drainage. Arrange Work to facilitate maintenance, repair, or replacement of equipment. Locate operating and control equipment and devices for easy access.
- 3. All unions, valves, meters, gauges or other equipment requiring frequent readings, adjustments, inspections, repairs, replacements or removals shall be conveniently and accessibly located.

4. Piping shall be installed with sufficient clearances to allow for proper servicing.
5. In no case shall any pipe, conduit, duct, or item of equipment be installed where it is supported on, or suspended from, another pipe, conduit, duct, or equipment.
6. Accessibility:
  - a. Install mechanical work to permit removal (without damage to other parts) of pumps, and other parts requiring periodic replacement or maintenance.
  - b. Arrange pipes, and equipment to permit ready access to valves, motors, control components, and to clear the openings of swinging and utility access covers.

**F. Mechanical Symbols.**

Mechanical Contract plans are diagrammatic and show requirements by the use of symbols. In general, these are recognized symbols of the industry and of the engineering profession. Most of the symbols used to show mechanical work are from the ASHRAE Handbook of Fundamentals.

**G. Cutting and Patching.**

1. Except under detailed written instructions signed by the Engineer, do not cut structural members intended to withstand stress. Cut openings through concrete (for pipe penetrations and similar services) by core drilling or sawing.
2. All cutting and patching and repair of damaged areas of work shall be done in a neat and workmanlike manner.
3. Restore the cut work in every respect, including the elimination of visual defects in exposed finishes.

**H. Expansion and Contraction.**

1. All piping shall be installed throughout the Project with due regard for expansion or contraction to prevent damage to the equipment piping. Provide anchors or offsets where required for the accurate control of movement.
2. All loops or offsets, shall be supplemented with adequate guides as close as possible to preserve alignment and pitch.

**I. Tools.**

On completion of the work, the Contractor shall furnish and deliver to the Engineer, any special tools that may be required for the proper servicing of any equipment that the Contractor has been furnished on the project.

**J. Pressure Tests.**

1. Each piping system shall be tested by the trade responsible for the work, under the supervision of either the Engineer or their authorized representative, or both.
2. Provide all necessary pumps, gauges, instruments, test equipment and personnel required for performing the tests. Drain all piping systems and remove all testing equipment after completion and acceptance of tests.
3. All defective material or defects in quality that develop during the tests shall be corrected in an approved manner and the subject piping retested.
4. All piping and connections shall be subjected to a pressure test.

5. Test may be made on isolated portions of such piping as will facilitate general progress of the installation. Any revision made in the piping system subsequently will necessitate retesting of such affected portion of the piping systems.
6. The test pressure shall be not less than 150 psi unless otherwise specified.

**K. Piping System Cleaning.**

Piping systems and equipment shall be thoroughly cleaned, after pressure testing.

**150179a.04 METHOD OF MEASUREMENT.**

Maintenance Water Line will be measured as a lump sum item.

**150179a.05 BASIS OF PAYMENT.**

The Contractor will be paid the lump sum contract price for Maintenance Water Line. This payment shall be full compensation for furnishing all materials, tools and labor for the performance of all work as described in the contract documents.



**SPECIAL PROVISIONS  
FOR  
FURNISH AND INSTALL ARCH RIB ANCHORAGE ASSEMBLY**

**Scott County  
IM-NHS-074-1(198)5--03-82**

**Effective Date  
April 25, 2017**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

~~This is a complete rewrite of the previous version of this special provision. No changes are indicated by shading or strikethrough.~~

**150208b.01 DESCRIPTION.**

- A.** This work consists of furnishing and fabricating the post-tensioning ducts, embedded grillages, Alloy 2507 Duplex Stainless Steel all-thread-bar system (S.S. all-thread-bars), anchorages for the S.S. all-thread-bars, and electrical isolation components for the S.S. all-thread-bars at the arch rib interfaces with Piers 12 and 13. Also included is the installation of all post-tensioning ducts, grillages, S.S. all-thread-bars, anchorages for the S.S. all-thread bars, and electrical isolation components for the S.S. all-thread-bars which are embedded within the concrete at the arch rib interfaces with Piers 12 and 13.
- B.** Post-tensioning is not included with this item. See the Special Provisions for Post-Tensioning of Arch Rib Bearings. Field milling of the embedded base bearing plate is not included with this item. See the Special Provisions for Arch Rib Bearings in Design No. 617 and Design No. 717.

**150208b.02 DEFINITIONS.**

**Anchorage (Arch Rib Anchorage):** Includes the grillage, Alloy 2507 Duplex Stainless Steel all-thread-bar system, bar anchorages for the S.S. all-thread-bars, and electrical isolation components for the S.S. all-thread-bars.

**Anchorage (Bar Anchorage):** An assembly of various hardware components which secures the S.S. all-thread-bars at their ends after they have been stressed and transfers a compressive force into the concrete or steel arch base. Includes the top cap and associated gaskets and bolts.

**Electrical Isolation Components:** A series of components intended to electrically isolate the S.S. all-thread-bars from other metallic components. Includes steel isolation washers, isolation sleeves, and isolation sleeves with flanges.

**Duct:** Material forming a conduit to accommodate S.S. all-thread-bar installation and provides an annular space for the grout.

**Grillage:** Bottom anchor bearing plate, template, embedded base bearing plate with all welded attachments, and other supporting structural steel framework that is embedded in the concrete. Excludes the shim plate and any structural steel that is part of the arch rib.

**Job Site:** The location where the post-tensioning is to be performed. Also called the "site".

**Set (also Anchor Set):** Anchor set is the total movement of a point on the post-tensioning bar during load transfer from the jack to the permanent anchorages.

**Tendon:** A complete assembly consisting of post-tensioning anchorages, S.S. all-thread-bar, and ducts with grout.

**150208b.03 MATERIAL.**

**A. General.**

Furnish S.S. all-thread-bar system from a single supplier.

**B. Structural Steel.**

ASTM A 709, Gr. HPS 70W steel unless noted otherwise. Painted.

**C. S.S. All-Thread-Bar System.**

1. Provide stainless steel anchor rods, full load end nuts, jam nuts, custom washers, stop-type couplings (coupling nuts), stressing nuts, and stressing bars conforming to the Special Provisions for High-Strength, Stainless Steel Bars for Post-Tensioned Concrete.
2. Fabricate the S.S. all-thread-bar with sufficient length beyond the top anchor bearing plates to allow for post-tensioning and anchorage device installation as shown in the plans.

**D. Steel Isolation Washers.**

1. Provide 1/8 inch minimum thickness coated hardened steel isolation washers in accordance with ASTM F436.
2. The dielectric coating shall be from one of the following products:
  - GPT HCS / Diamond Hyde / X37 hardened coated washer system.
  - Lamons Sealing (HC Washer System).
  - Approved Equivalent.

**E. Isolation Sleeves and Isolation Sleeves with Flange.**

Provide Isolation Sleeves and Isolation Sleeves with Flanges that are constructed from G-10 Epoxy Glass with the following properties:

Property	Test Method	Required Value
Tensile Strength, Lengthwise	ASTM D-638	39,000 psi, minimum
Dielectric Strength, Condition A	ASTM D-149	400 V/mil, minimum
Dielectric Breakdown Voltage, Condition A	ASTM D-149	65 kV, minimum
Water Absorption	ASTM D-229	0.10 % maximum



**F. Ducts.****1. General.**

The contractor shall verify that the ducts specified in the plans are of sufficient rigidity and strength to withstand all load, pressures, and deformations applied by the contractor's proposed construction sequence. The ducts shall maintain their shape, remain in proper alignment and remain watertight as required in order to obtain a satisfactory final product. If the specified ducts are not sufficient for the contractor's proposed construction method, the contractor shall determine the required size, thickness, material, and detailing for alternate ducts or shall provide alternate support for the ducts and grillages. The contractor shall prepare and submit information regarding these revisions for review and acceptance by the engineer. Alternate ducts and/or alternate supports shall be provided at no additional cost.

**2. Round HSS.**

Provide round Hollow Structural Sections conforming to ASTM A 1085.

**3. Duct Connections and Fittings.**

- a. All connections and fittings shall be airtight.
- b. Provide a duct system that effectively prevents entrance of cement paste or water into the system and effectively contains pressurized grout during grouting of the S.S. all-thread-bar.

**4. Shipping, Handling, and Storage of Ducts.**

Furnish duct with end caps to seal the duct interior from contamination. Ship ducts which are capped and covered during shipping and storage. Protect ducts against bending, dirt contamination and corrosive elements during transportation, storage, and handling. Do not remove end caps supplied with the duct until the duct is incorporated into the bridge component. Store duct in a location that is dry. Store on a raised platform and completely covered to prevent contamination. If necessary, wash ducts before use to remove any contamination.

**G. Leveling Anchor Rod.**

ASTM A 307 with ASTM F 844 washers and ASTM A 563 nuts.

**H. Post-Tensioning Anchorage.**

Secure S.S. all-thread-bars at the ends by means of permanent type anchoring devices as shown in the plans that conform to the Special Provisions for High-Strength, Stainless Steel Bars for Post-Tensioned Concrete.

**I. Top Caps.**

ASTM A 1085 Hollow Structural Section and ASTM A 588 steel plate with neoprene rubber washer and ASTM A449 Type III, ASTM A449 Type I, or SEA J429 Grade 5 plain finish bolts or cap screws. ASTM A 572 or ASTM A 36 steel plate may be substituted at no additional cost.

**J. Grout Tubes.**

1. Use grout tubes to allow the escape of air, water, bleed water, and grout. Provide permanent grout tubes and threaded plugs made of ASTM A 240 Type 316 stainless steel, nylon, or polyolefin materials. For products made of nylon, the cell class of the nylon according to ASTM D 5989 shall be S-PA0141 (weather resistant), S-PA0231 or S-PA0401 (ultimate strength not less than 10,000 psi with UV stabilizer added). Product made from polyolefin shall contain antioxidant(s) with a minimum Oxidation Induction Time (OIT) according to ASTM D 3895 of not less than 20 minutes. Perform OIT test on samples taken from the finished product. Test the remolded finished polyolefin material for stress crack resistance using ASTM F 2136 at an applied stress of 348 psi resulting in a minimum failure time of 3

hours. Neither metallic nor plastic components, if selected and approved, shall react with the concrete or enhance corrosion of the post-tensioning steel. Use plastic components free of water soluble chlorides.

2. All grout tubes shall be equipped with pressure rated mechanical shut-off valves or plugs. Grout tubes shall be rated for a minimum pressure rating of 150 psi. Use grout tubes with a minimum inside diameter of 3/4 inch.

**K. Testing Requirements.**

**1. General.**

- a. Testing shall conform to the applicable ASTM Specifications or Special Provisions for the post-tensioning material used.
- b. Furnish all material samples for testing at no additional cost.

**2. S.S. All-Thread-Bars.**

Furnish samples for testing as described in the Special Provision for High-Strength, Stainless Steel Bars for Post-Tensioned Concrete for the manufacturer of S.S. all-thread-bar to be used on the project.

**150208b.04 SUBMITTALS.**

**A. General.**

1. Submit detailed shop drawings, calculations, and manuals for all work related to fabrication and installation of the arch rib anchorages, including methods for supporting the grillage and ducts during construction, and ensuring correct geometric alignment. Provide shop drawings and calculations that are sealed by a Professional Engineer licensed in the State of Iowa. Do not commence work until the submittals have been approved.
2. All submittals are to accurately detail the actual methods, materials, equipment, etc., that will be used in the field on the project. Deviation is not permitted unless approved by the Engineer.

**B. Submittals.**

At a minimum, submit the following information:

1. A post-tensioning system that meets the requirements of the contract documents.
2. A detailed proposed sequence of construction, including any variations from the suggested sequence provided herein.
3. Specific details regarding the assembly of the post-tensioning assemblies.
4. Properties, dimensions, and designations (where applicable) of each of the components of the post-tensioning assemblies, including the top cap.
5. Appropriate details of changes from the dimensions shown on the plans with clear and concise cross reference to the appropriate plans to which the variations apply.
6. Details of, and supporting calculations for, any modifications to reinforcement at anchorages, made necessary for accommodating the elected post-tensioning system hardware.
7. Duct support detail and spacing and the sequence of operations for securing the tendons.

8. A procedure for geometry control of the grillage and ducts in accordance with the information provided in the contract documents. Specifically include information regarding placement tolerance for lower portion of S.S. all-thread-bars and how those tolerances relate to installability of the upper portion of the S.S. all-thread-bars including consideration of tolerances for arch rib section R0 and any other potential sources of misalignment. At the S.S. stop-type coupling, a non-conductive centralizer that allows the passage of grout is recommended to center the coupling within the lower duct and prevent contact between these tendon components. The length of the centralizer shall be limited to one half the length of the stop-type coupling.
9. Details and calculations for the support of the grillage and ducts prior to placement of the concrete.
10. Details of the methods and equipment employed to ensure the proper position of the top surface of the embedded base bearing plate.
11. Actual survey data for the top surface of the embedded base bearing plate. Submit this data after the arch rib anchorage assembly is secured in place, but prior to placement of the concrete.
12. Details of any other equipment used during installation.
13. Any manufacturer's literature, where applicable.
14. Safety procedures.

**C. Submittal Procedures.**

Unless noted otherwise, submit the above in advance of the start of construction to allow a 30 calendar day review period. All submittals not approved and requiring resubmission shall be subject to the above review time period, with the review time beginning anew for each such submittal. Coordinate all submittals between various subordinates (contractors, suppliers, and engineers) to allow for a reasonable distribution of the review effort required by the Engineer at any given time.

**150208b.05 CONSTRUCTION.**

**A. General.**

1. Perform all work in accordance with Sections 2404 and 2408 of the Standard Specifications, where applicable, and as modified or appended herein.
2. Steel isolation washers that exhibit cracked, scratched, or otherwise compromised dielectric coating shall be replaced. Use only steel isolation washers that have a complete, intact, and undamaged dielectric coating.
3. Supply embedded base bearing plates that are at least ¼ inch over the specified thickness indicated in the plans.

**B. Protection of S.S. All-Thread-Bars and Hardware.**

Protect all S.S. all-thread-bars and hardware as indicated in the Special Provision for High-Strength, Stainless Steel Bars for Post-Tensioned Concrete.

**C. Fabrication.**

**1. General.**

Accurately and securely fasten all ducts, miscellaneous hardware, reinforcing bars, and other embedments at the locations shown on the plans or on the approved Shop or Working Drawings or as otherwise approved by the Engineer.

**2. Ducts.**

- a. Accurately align ducts and position at the locations shown on the plans or according to the approved shop or working drawings or as otherwise approved by the Engineer.
- b. Carefully check all ducts before placing any concrete.
- c. Ensure that all alignments are smooth and continuous with no lips, kinks or dents.
- d. After installing the ducts and until grouting is complete, ensure that all ends of ducts are sealed at all times, except for post-tensioning operations.

**3. Tolerances.**

- a. Ensure that tendons (ducts and S.S. all-thread-bars) are accurately positioned to ensure they will allow installation of the upper portions of the S.S. all-thread-bar.
- b. If conflicts exist between the concrete reinforcement and post-tensioning duct, the position of the post-tensioning duct shall prevail and the reinforcement shall be adjusted locally with the Engineer's approval.

**4. Grout Tubes.**

- a. Place grout tubes at locations shown in the plans and shop drawings. Equip all grout tubes with positive shut-off devices. Grout tubes shall be installed with plugs or valves in the closed position. The use of duct tape is not permitted. Leave low point grout tubes open to prevent water build-up in the duct.
- b. Ensure grout tubes connect to the ducts as close to the high/low spot (as applicable) of each duct section to ensure that each section of duct is vented/drained (as applicable) as effectively as possible considering the final installed position of each duct section in the finished structure.
- c. Install grout tubes for injection vents to slope down from the duct to the concrete surface, and extend them a sufficient distance out of the concrete to allow for proper closing of the valves.
- d. The number of grout tubes depicted in the contract drawings is the minimum number that will be considered. The contractor shall provide additional grout tubes as required in order to assure complete and satisfactory grouting using the actual proposed construction method and equipment. Additional grout tubes, if required, shall be provided at no additional cost.

**5. Isolation Sleeve with Flange.**

Provided isolation sleeves shall fit tightly within the hole and counterbore in the top anchor bearing plate such that they will not become dislodged during construction activities.

**D. Internal Duct Pressure Test.**

Pressure test all duct assemblies constructed on the project. Test the assemblies in their final position just prior to concrete placement by sealing them at their anchorage or construction joint termini and then by applying compressed air to determine if the assembly connections are pressure tight. In the presence of the Engineer, pressurize the duct to 1.5 psi and lock-off the outside air source. Then record the pressure loss for a duration of one minute. If the pressure loss exceeds 0.15 psi, find and repair the leaks in the duct assembly using repair methods approved by the Engineer and retest.

**E. Placing Concrete.**

1. **Precautions:** Exercise great care when placing and consolidating concrete so as not to displace or damage any of the post-tensioning ducts, reinforcement or other embedment. Do not place concrete until actual survey data of embedded base bearing plate have been approved by the Engineer.
2. **Problems and Remedies:** The Engineer will reject ducts or any part of the work found to be deficient. Perform no remedial or repair work without the Engineer's approval.

**F. Stress Relief Heat Treatment.**

1. Perform stress relief heat treatment on the completed, embedded base bearing plate weldment in accordance with Article 2408.02, I of the Standard Specifications.
2. After weldment is removed from the heat treating furnace, carefully visually (VT) inspect the weldment at all changes in section and at other locations where stresses have been concentrated. Magnetic Particle (MT) Testing may be required to supplement VT when ordered by the QA shop inspector representing the Engineer.
3. Conduct stress relief heat treatment following the completion and acceptance of the NDT of the welds.

**G. Welding.**

1. Perform fillet welding of round HSSs to embedded base bearing plates and template plates in accordance with AWS D1.1/D1.1M Structural Welding Code – Steel. MT 100% of these fillet welds.
2. Ultrasonically Test (UT) (Tension Acceptance Criteria) 100% of all complete and partial joint penetration (CJP, PJP) welds in the arch rib anchorage assemblies.
3. MT 100% of all fillet welds in the arch rib anchorage assemblies.

**H. Suggested Sequence of Construction.**

The suggested sequence of construction is as follows:

1. Assemble the post-tensioning ducts and grillages as follows:
  - a. Install jam nut and stop-type coupling on the top of the bottom S.S. all-thread-bar in accordance with the manufacturer's recommendations.
  - b. Install the Isolation Sleeve into the holes in the bottom anchor bearing plate and template.
  - c. Secure template and bottom anchor bearing plate onto the bottom of the bottom S.S. all-thread-bar with S.S. nuts and steel isolation washers as shown in the plans.
  - d. Slide round HSS over bottom S.S. all-thread bar and weld to template plate. Ensure that there is no contact between the duct and the stop-type coupling (see recommendation in 150208b.04, B, 8 regarding to the use of a centralizer).
  - e. Place embedded base bearing plate assembly over the tops of the round HSSs, adjust position using leveling rods, and weld.
  - f. Temporarily cover the open ends of the post-tensioning ducts to adequately protect from dirt, debris, and water.
2. If the ducts and grillages are not assembled in-place, place the assembly in the pier and position as shown in the plans. Secure the assembly in place and support against movement.

3. Perform a survey of the top surface of embedded base bearing plate.
4. Place reinforcing steel and concrete for the pier in accordance with the contract documents.

**I. Temporary Corrosion Protection.**

Provide a method of sealing the ducts containing the S.S. all-thread bars until arch rib segment R0 is placed and the final grouting of the tendons is accomplished. At a minimum, the method shall prevent water from collecting inside the duct, while not hindering the future installation of the upper portions of the S.S. all-thread bars or the steel arch segments.

**150208b.06 METHOD OF MEASUREMENT.**

Lump sum. No method of measurement.

**150208b.07 BASIS OF PAYMENT.**

- A. Payment for the arch rib anchorage assemblies is full compensation for furnishing and fabricating the post-tensioning ducts, embedded grillages, Alloy 2507 Duplex Stainless Steel all-thread-bar system, anchorages for the S.S. all-thread-bars, and electrical isolation components for the S.S. all-thread-bars at the arch rib interfaces. Installation of all post-tensioning ducts, grillages, S.S. all-thread-bars, anchorages for the S.S. all-thread bars, and electrical isolation components for the S.S. all-thread-bars which are embedded within the concrete at the arch rib interfaces is also included with this item. Surveying necessary for installation is also included with this item.
- B. Payment for the arch rib bearings and post-tensioning are not included with this work. See Design No. 617 and Design No. 717.

105-4  
10-18-11

**STANDARD ROAD PLANS**

The following Standard Road Plans apply to construction work on this project.

EC-202	10-21-14	FLOATING SILT CURTAIN
LI-104	10-21-14	JUNCTION BOX (CAST IRON)
LI-142	04-21-15	ELECTRICAL INSTALLATION (BASES)
LI-152	10-21-14	CONTROL CABINET (PAD-MOUNTED)
TC-1	04-16-13	WORK NOT AFFECTING TRAFFIC (TWO-LANE OR MULTI-LANE)

111-25  
10-18-11

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254-1  
10-02-01

**INCIDENT MANAGEMENT**

An incident management plan, provided by the District Office, will be discussed at the pre-construction conference.

281-1  
10-18-16

**SECTION 404 PERMIT AND CONDITIONS**

Construct this project according to the requirements of U.S. Army Corps of Engineers Individual Permit, Permit No. 2016-1217. A copy of this permit is available from the Iowa DOT website (<http://www.envpermits.iowadot.gov/>). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

WHKS-1

**ENVIRONMENTAL PROTECTION**

Refer to Special Provision for Environmental Protection and Special Provision for Mussel Conservation

100-10  
Modified

**FLOATING SILT CURTAINS**

Refer to EC-202

Station	Hanging	Containment	Clean-out (Containment)	Maintenance of Floating Silt Curtain	Remarks
	LF	LF	LF	LF	
Iowa Bank to Pier 13	600.0			300.0	
Total	600.0	0.0	0.0	300.0	












**TRAFFIC CONTROL PLAN**

Traffic is to be maintained on I-74 mainline and ramps per Roadway Contracts IM-NHS-074-1(205)5--03-82, IM-NHS-074-1(206)5--03-82, and IM-NHS-074-1(207)5--03-82, 64C08 and 64E26. Temporary barrier rail, pavement markings, and traffic control devices included in the Roadway plans shall be maintained by the Roadway Contractor. The Bridge Contractor shall not remove, relocate, or alter these devices without approval from the Engineer. The Bettendorf Bike Trail shall be detoured by Contract IM-NHS-074-1(197)5--03-82 construction of the spans over the bike trail.

In the event of extreme high water, the City of Bettendorf may temporarily place sandbag dikes along 10th Street between Grant Street and State Street. Grant Street and State Street will be closed to traffic during extreme high waters. The Contractor shall fully cooperate with the City including suspension of work and the removal or relocation of all lane closures, construction equipment, and traffic control devices as requested by the City.

Closures on the existing I-74 bridges will not be allowed with active traffic.

**PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS**

LINE WORK	Design Color No.		
Green	(2)		Existing Topographic Features and Labels
Magenta	(5)		Pavement Marking Call Outs
Blue	(1)		Proposed Alignment, Stationing, Tie Marks, and Alignment Annotation
Yellow	(4)		Pavement Markings, Yellow
Off White	(254)		Pavement Markings, White
SHADING			
SHADING	Design Color No.		
Green, Light	(225)		Existing Pavement Shading
Blue, Light	(230)		Proposed Pavement Shading by Others
Orange	(6)		Proposed Bridge and Sign Truss Shading by Others
Red	(3)		Proposed Bridge & Sign Truss Shading
Gray, Light	(48)		Previously Constructed Pavement or Structure Shading
Lavender	(9)		Temporary Pavement Shading

**STAGING NOTES**

Pre-Stage Milestone Completion Date Tuesday, November 21, 2017  
Applies to Illinois Contract 64C08 only: plug fill earthwork near Illinois bank of the Mississippi River in place to allow settlement time. All work is off alignment. (During the Pre-Stage, traffic is on existing alignments.)

Stage 1 Milestone Completion Date Tuesday, November 20, 2018  
Applies to Project IM-NHS-074-1(205)5--03-82 and Illinois Contracts 64C08 and 64E26 only: in Iowa, storm sewer installation and shoulder strengthening on I-74 north of Mississippi boulevard; in Illinois, I-74 mainline reconstruction south of Avenue of the Cities and local road work in Moline to be completed for use as alternate routes in Stage 2. All other work is off alignment. (During the Stage 1, traffic is on existing alignments, except for I-74 lane shifts north of Mississippi Boulevard and south of Avenue of the Cities, and in Illinois, local road detours to accommodate the work described above.)

Stage 2 Milestone Completion Date Tuesday, November 26, 2019  
Westbound I-74 mainline and ramp work to be completed to open to traffic. (During Stage 2 WB I-74 is closed from Avenue of the Cities in Moline to Middle Road in Bettendorf; the existing bridge over the Mississippi River remains open for local crossing only.)

Winter Stage Completion Date Tuesday, March 31, 2020  
Applies to Project No. IM-NHS-074-1(206)5--03-82 and Illinois Contracts 64C08 and 64E26 only: crossovers and an EB exit in Moline to be completed to shift EB I-74 to counterflow lanes on new Westbound I-74. (During the Winter Stage, new WB I-74 mainline and ramps are open to traffic, while EB I-74 traffic remains on the existing alignment.)

Stage 3 Milestone Completion Date Tuesday, November 24, 2020  
Eastbound I-74 mainline and ramp work to be completed to open to traffic. (During Stage 3 WB I-74 and EB I-74 traffic are both on counterflow lanes of new WB I-74.)

**COORDINATED OPERATIONS**

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
2017	
IM-NHS-074-1(197)5--03-82	Bridge-WPG
IMN-74-1(254)5--0E-82	Bridge Repair
IMN-74-1-(223)5--0E-82	Bridge Cleaning
IMN-74-1(228)0--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge-Unspecified
IM-NHS-074-1(260)1--03-82	Grading
IM-74-1(226)5--13-82	PCC Pavement - Grade & Repl.
64C08	Illinois DOT Road and Bridge
2018	
IM-NHS-074-1(197)5--03-82	Bridge-WPG
Project # Unknown	Bridge Repair
IMN-74-1-(240)5--0E-82	Bridge Cleaning
IMN-74-1(239)0--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge-Unspecified
IM-NHS-074-1(260)1--03-82	Grading
IM-NHS-074-1(205)5--03-82	Pavement - Grade & Replace
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge
2019	
IM-NHS-074-1(197)5--03-82	Bridge-WPG
Project # Unknown	Bridge Repair
IMN-74-1-(249)5--0E-82	Bridge Cleaning
IMN-74-8(248)5--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge-Unspecified
IM-NHS-074-1(260)1--03-82	Grading
IM-NHS-074-1(205)5--03-82	Pavement - Grade & Replace
IMN-74-1(208)5--0E-82	Lighting
IMN-74-1(209)5--0E-82	Lighting

**COORDINATED OPERATIONS**

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
IMN-74-1(235)5--0E-82	Lighting
IM-NHS-074-1(206)5--03-82	Pavement - Grade & Replace
IM-NHS-074-1(219)5--03-82	Traffic Signs
IM-74-1(255)5--13-82	Pedestrian Bridge
IM-NHS-074-1(200)5--03-82	Bridge, New - Steel Girder
ITS-074-1(221)5--05-82	ITS Deployment and Integration
ITS-074-1(222)5--05-82	Fiber Optics
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge
2020	
IM-NHS-074-1(197)5--03-82	Bridge-WPG
IM-NHS-074-1(200)5--03-82	Bridge, New - Steel Girder
IM-NHS-074-1(206)5--03-82	Pavement - Grade & Replace
IM-NHS-074-1(207)5--03-82	Pavement - Grade & Replace
IM-NHS-074-1(220)5--03-82	Traffic Signs
IM-74-1(255)5--13-82	Pedestrian Bridge
IM-74-1(210)5--13-82	Bridge Removal
IM-74-1(214)5--13-82	Bridge Removal
IMN-74-1(256)5--0E-82	Bridge Cleaning
IMN-74-1(257)5--0E-82	PCC Patching
ITS-074-1(221)5--05-82	ITS Deployment and Integration
ITS-074-1(222)5--05-82	Fiber Optics
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge